

Motor Age

Vol. II. No. 21

NOVEMBER 20, 1902

5 Cents

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(THE WHEEL THAT'S TRUE!) "Let another man praise thee"—Proverb xvii, 2.

We this week allow
some people who know
something about

MIDGLEY TUBULAR STEEL WHEELS

to do a....
little talking
....for us

With the advent of the Automobile the demand for many new departures from old lines has been felt, and apart from the motive force, no part is of more importance than the foundation of your machine, "the Wheels," for on their reliability may depend your life. Below we enumerate a few instances which show the strength of the "Midgley Wheel" when occasion arises:

Midgley Manufacturing Company:

Gentlemen—No doubt you will be interested in hearing of my experience with your steel wheels. I put a set of your steel wheels on my machine, which weighs about 1,200 pounds, more than a year ago, and since that time have run over 5,000 miles on them. During this time I had a number of accidents, which I have every reason to believe would have been serious if it had not been for the great strength of these wheels. Like every one who runs an automobile, I have had more or less trouble from skidding on wet pavements, and have a number of times skidded into the curbstone violently, but without damaging these wheels or the machine in the least. At one time, when running on a wet asphalt pavement, the machine skidded immediately in front of a street car. The front of the car struck one of the rear wheels of my machine at an angle, "shoving" the machine off the track. As the car passed, the journal box on the car again caught the edge of the hind wheel

with such force that it turned the automobile almost entirely around. Upon getting out and examining what damage had been done I could find no other damage except a slight bend in the rear driving shaft. The journal box of the street car had been smashed and the car was unable to proceed on its way without repairs. Today these steel wheels run as true, and excepting for the outside finish are in as good shape as the day they were put under the machine. There is no other movable part of my machine that gives me so little trouble as the wheels. Yours respectfully,
F. H. LINDENBERG.

Mr. Hastings, of Hastings & Miller, the large photographic supply house of New York, writes as follows:

New York, October 15, 1902.
The Midgley Manufacturing Company,
Columbus, Ohio:

Gentlemen—I wish to repeat the statement made by me to the Automobile

Magazine, of New York, which appeared in the October issue of that journal.

The Midgley old style tubular steel wheels which I purchased from you and used on my locomobile for a year or more, which replaced the wire ones on my machine, are as good today as when first put on, although I have used the little steamer upward of 4,000 miles. One day I punctured a tire on Long Island and drove eighty miles on the Midgley rim, a good part of the way over cobble and brick pavement. I am satisfied that no other wheel would have stood that treatment, but there was scarcely a mark on the rim. I am now using your new artillery pattern on the new touring steam vehicle built by myself during odd times.

Wishing you the unbounded success that such an article as the Midgley tubular steel wheel merits—which I consider the best wheel in the market today—I remain, Yours very truly,

T. K. HASTINGS.

You had better get the best wheels when ordering your 1903 Automobile. Say "We Want Midgley," and you will get them.

The Midgley Mfg. Co.
Columbus, Ohio.

Eastern Selling Agent:
THOS. J. WETZEL, 50 Warren St., New York
Western Selling Agent:
K. FRANKLIN PETERSON,
165 Lake Street, Chicago

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Motor Age

WITH WHICH IS INCORPORATED
CYCLE AGE

VOL. II. NO. 21.

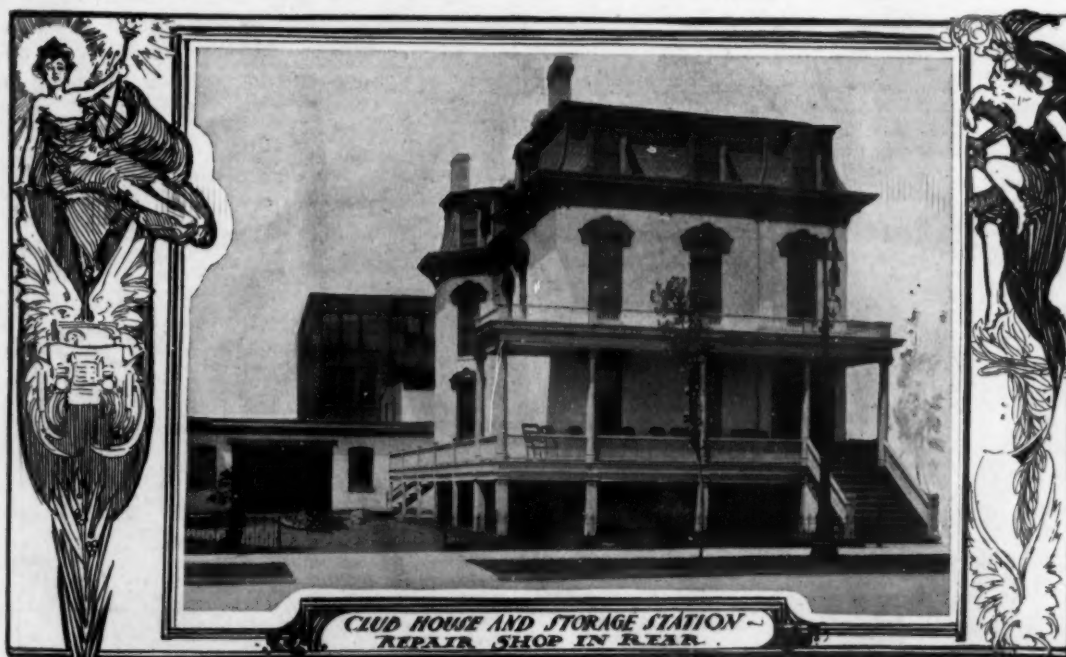
CHICAGO, NOVEMBER 20, 1902.

\$2.00 PER YEAR

The Chicago Automobile Club.

THE REAL usefulness of the Chicago Automobile Club is of such recent origin as to be familiar to a majority of up-to-date automobilists. It was organized in August of 1900 but, except that it shared in the discredit of an unsuccessful and poorly managed race meeting whose memory haunted it for many months, really accomplished little until the spring of the present year. The Chicago club was organized, as all such clubs are, with the intention of promoting the interests of automobile owners; of affording an oppor-

ideas has certainly been a pronounced success, many a local operator owing the bulk of his knowledge to the dinner-table chats of the last six months. Club runs have not been entirely successful. The gathering of a crowd, the prevention of scorching and other difficulties have worried the officers. Especially, no plan of entertainment has been found of sufficient interest to regularly draw good attendances. There have been exceptions, of course. Once the club ran to Hammond, Ind., for some speed trials. Again, it went to Grand



tunity of exchanging ideas and of promoting club runs. All of these purposes have been carried out to some extent. Local legislation has been given attention and unfair action by the city council and park commissioners probably prevented. The exchange of

Rapids as the guest of the Grand Rapids Automobile Club. These events were unqualifiedly successful, as were the 100-mile endurance run in August and the race meeting in October.

In one matter the Chicago Automobile Club prob-



ably excels all others in the world—its club house. This was secured early in the spring. The club's usefulness dates from that time. The building at 243 Michigan avenue was erected and occupied by Hetty Green. In later years it became a hotel. For some months before the club secured it it had been unoccupied and had gone the way of all unoccupied buildings. From cellar to garret it was in indescribable confusion.

But it had an abundance of room and by a free expenditure of money the club has made it in every way a desirable home.

In March of the present year the club had only sixty members. Today it has 148 active and a score of associate members. Over 100 automobiles are owned by members of the club and additions are being made to the roll at the rate of about a dozen each month.



The club house has four floors. In the sub-basement is a billiard room, buffet, storage rooms and kitchen. The main floor contains the parlor, ladies' rooms, office, main dining room and private dining room. Here meals are served at any hour of the day. On the second floor are fourteen bedrooms, several of them occupied by members, a smoking room and bath rooms. There are seven rooms on the top floor, occupied by the servants.

At the back of the house is a two-story brick repair shop, in charge of a competent man. Beside it is a garage, about 50 feet square, whose capacity is already well tested. All facilities for charging, washing etc.

lowing members of committees: Membership, F. C. Donald, J. E. Keith. House, W. H. Hoops, J. E. Ellis, J. B. Burdett, Lawrence Heyworth, Dr. F. C. Greene. Entertainment, Frank X. Mudd, G. H. Atkin, Vernon Cassard. Racing, S. A. Miles, R. H. Croninger, K. Franklin Peterson. Runs and tours, John Farson, Dr. F. H. Davis, Dr. Christopher. Good roads—Howard H. Gross, F. C. Donald. Legislative, B. F. Schlesinger, F. R. Babcock, C. W. Gray, W. H. Chamberlin, H. M. Brinkerhoff. Auditing, Dr. F. C. Greene, W. R. Smith, John Farson.

At the same meeting Mr. Palmer, the new president, was recommended as a candidate for one of the va-



are at hand. No charge is made for storage of vehicles unless they are left more than 24 hours.

Thursday is ladies' day. They are privileged to take possession of any part of the house except the office and smoking rooms. At all other times the ladies' room and the main dining room are at their disposal.

The club's annual election took place on Thursday of last week. The nominating committee had spent a month in an endeavor to find men whose work would increase the influence and membership of the club, and apparently succeeded. A flood of new applicants followed the announcement of the ticket, a dozen being accepted at the last meeting of the retiring board. The ballot resulted in the election of the following: President, Honore Palmer; first vice president, John Farson; second vice president, Howard H. Gross; secretary, Walter H. Chamberlin; treasurer, Frank X. Mudd; directors, F. C. Donald, Edwin C. Brown, W. H. Hoops, Dr. F. C. Green, Charles W. Gray, Samuel A. Miles.

The directors met on Tuesday and selected the fol-

cancies on the racing committee of the American Automobile Association, Mr. Stewart, the chairman, having expressed a desire that such recommendation be made.

On Saturday of this week about a dozen machines, with members of the club, will leave at 10 a. m. for Milwaukee, doubtless the final run of the season.

In Lieu of Street Cars.

Spire, a town in Germany, which has never had railroad or tramway connections with its suburbs has determined to install an automobile service and a company with \$25,000 capital has been formed. The city furnished four-fifths of the amount and has guaranteed 5 percent interest on the other fifth during ten years. The post office department assisted by giving the company its mail carrying contract. The company has four 10-horse power vehicles. They look very much like Parisian omnibuses without the top seats. There is room for twenty-eight people in each. An extra vehicle is run on Sundays.

Motor Age

PUBLISHED EVERY TUESDAY BY SAMUEL A. MILES.
Principal Offices: 324 Dearborn Street, Chicago.
Eastern Offices: 150 Nassau Street, New York.
European Representative American Publication Bureau, 58
Manor Park Road, Harlesden, London, N. W.

TELEPHONE NUMBER, HARRISON 3584.

MOTOR AGE is entered at the Chicago Postoffice as second class matter.

TO ADVERTISERS: Copy for advertisements must reach the Chicago office not later than Tuesday morning to insure insertion the same week.

Motor Age may be obtained, by any newsdealer, through the Western News Company, Chicago, or any of its branches, which are located in every large city in the United States.

The editor will be glad to receive communications for publication. They must be accompanied by the names and addresses of senders, which will not be used if request be made to that effect. Contributions will not be paid for unless accompanied by notice that payment is expected.

Subscription, Two Dollars a Year, - Six Months, One Dollar

MORE AND BETTER INSTRUCTION BOOKS.

ALTHOUGH in large cities automobiles are generally purchased of local retail dealers or manufacturers' branch houses, hundreds of vehicles are being monthly shipped to residents of smaller cities and towns. These purchasers have not the opportunity of instruction at the hands of the agent or his assistants. They must learn for themselves the operation of the carriages. This may be simple enough when properly undertaken, but for a man who does not know the exact difference between a four-cycle engine and an eight-day clock it is no easily self-tutored task. Neither is it amusing when the expense of mistakes falls upon the learner.

It is out of the question for the maker to send an expert with every vehicle shipped, but the instruction book can go as a silent instructor and if properly written and compiled should be sufficient to furnish the embryo automobilist with most all of the information needed to enable him to take to the road for the additional knowledge which experience teaches all motorists. Many of the instruction books or cards sent out are incomplete or not fully explanatory. It is almost habitual with many technical writers to forget, when writing, that the reader may know little or nothing of the elementary facts concerning the subject at hand. Hence they jump into the middle of the story and strike out for the finish without pausing to think that the poor reader may be swamped at the start. It is not enough to tell the prospective driver what to do to certain elements of the machine in order to start it. It should be assumed that he does not even know them by name. He should be told what they are for and why they are on the machine. It is easier for him, knowing what they are for, to determine what to do with them than it is for him to know what they are for by simply being told what to do with them.

Not only are some instruction books scant of the right sort of information, but many vehicles are sent out without even a line of direction concerning the starting and subsequent operation. This is on the face of it poor policy. An automobile well operated is one of its own best advertisements and when, in these early days of the industry, the first few automobiles go to new territory they should go furnished with information which will enable their purchasers to operate them so that they will reflect creditably upon their makers and upon the trade as a whole—upon automobiling. In every small community each automobile that appears is watched by every person in town. There are many prospective purchasers occupying front seats at the show. The best automobile may make a poor showing when sent unarmed with an instruction book into the hands of a dozen inquisitive but well meaning local tinkers.

Here is a true illustration of the sort of impression a misunderstood automobile may make: A country purchaser had for a whole day experimented with everything experimentable on a light runabout in the endeavor to get the machine started. When he had finally succeeded in getting the carriage to run he promptly, by incorrect handling of the speed lever, stripped the rawhide pinions in the planetary transmission gear. When the gear had been taken apart and distributed over the barn floor the owner surveyed the ruins and, scratching his head, said in a reflective style:

"Gee, it looks as though this game might be expensive."

The lesson is obvious. The machine was all right and likewise the man. But they needed an introduction to each other before becoming intimate. The instruction book, fully explanatory but plainly worded, should always serve this purpose.

THE AMERICAN STYLE OF CONSTRUCTION.

AUTOMOBILE design diverges into so many channels which wind about, meet and cross one another at so many points in their course that it is impossible to lay down a hard and fast rule governing the classification of the numerous patterns and styles of vehicles. Neither is it possible to say that one style represents the whole industry in one country. We have accepted European ideas and French, English and German makers are contemporaneously developing machines along structural lines firmly established here. But just as the now common motor-front construction has been popularly known as the "French style," and is still often so called despite its common adaptation in this country, so may the general lines upon which so many of our lighter carriages are built be justly called the American style, if there is any possibility whatever for the possession of an American style.

Almost with the inception of the American automobile came rigs with the horizontal gasoline motor placed longitudinally under the central portion of the

body. On its right a driving and speed clutch afforded means for transmission by a single chain to a differential gear on a live rear axle. Rob any of the score or more of prominent American carriages of the 1,000 pound class of their bodies, tanks and other accessories whose exact disposition is immaterial in any style of car, and one has before him the same vehicle. A better motor, a better frame, better detail construction, lighter design—it is yet the same as the others of its class and yet but the development of the early carriage.

It may not last forever but, now at least, its prominence in the trade is undisputed. It is built by different makers and has bodies of many shapes and is finished in paints of many shades. But it cannot be robbed of its chief characteristic—the location of the motor and transmission gear and the method of drive to the rear wheels. It is not broadly representative of the automobile industry in America, but here it was developed and here it has received a wide adoption and a general popularity. If there is an American style this is it.

AUTOMOBILE TRADE ADVERTISING.

READERS of automobile journals may care very little whether or not the advertisements in that paper are well written—written to secure financial returns. At the same time readers are much interested in the advertisements, else would the advertisements be worthless. The reader is interested in the advertisement which is made to interest him. He is not interested in the advertisement which is devoid of interest. No automobile journal is wholly meritorious unless its advertising pages, as well as its reading pages, are bright and replete with interest. The editors of a paper may make its reading pages, but the making of the advertising pages is a co-operative venture in which both the advertiser and publisher engage. Also, they work with a double end—to attract and interest the reader and to secure profit for the advertiser. While

the publisher is mainly responsible for the mechanical presentation of the advertisement, the advertiser is solely responsible for its interesting and attractive qualities.

The degree of interest possessed by an advertisement depends not only upon what is said and how it is expressed but also upon the number of statements made. To attract the reader without fully stimulating his interest falls short of successful advertising; it is equally undesirable to say too much in an attempt to be on the safe side. The advertisement must attract before it can interest. When loaded to the limit with matter of even highly interesting nature it generally ceases to attract and its whole purpose is often lost. The right amount of the right kind of advertising talk presented in the right way makes the sum total of a successful advertisement.

Any automobile journal furnishes first-class examples of advertisements whose writers have sought returns by the bulk of argument rather than by its attractive and convincing nature. The quality may be there, but still too much quality in one dose loses its savor. The automobile industry is not of this week or of next. It is permanent, and there is no occasion for the telling of the whole advertising story in one bundle of commercial rhetoric. Every automobile journal publisher feels the pressure of saying too much in advertisements. He endeavors to co-operate with the advertiser by presenting the advertisement in the most effective typographical style. His efforts are restricted by the unrestricted pen of the advertisement writer. The proper display can not be made when an advertisement is full from side to side and from top to bottom with evenly interesting details of the advertiser's business. Automobile advertising in automobile journals will become more attractive and prove more interesting to the readers—hence more profitable to the advertiser and generally more satisfactory to the whole industry—when all the advertisers and not only a minority of them have grasped the full lesson of the judicious use of advertising talk.

Steel Roads for Automobiles Projected by Clubs.

Material for the construction of the first section of Gen. Roy Stone's experimental steel road, which is to be built at the expense of members of the Automobile Club of America, was deposited on Murray street, New York, Saturday, preparatory to work being begun on Monday. The tracks will be laid between Broadway and Church street.

The trucking through this street is heavy. Major F. B. Jones, U. S. A., who is to superintend the work, counted thirty wagons entering the block in ten minutes recently. The road is poor and the tracks, which will be laid in the middle of the street, are expected to be very generally used. A record of the traffic over the tracks will be kept. Later a half-mile stretch of steel road is to be laid "uptown" on St. Nicholas or

Seventh avenue in the neighborhood of One Hundred and Twenty-fifth street.

President C. M. Schwab, of the United States Steel Corporation, had a mile of tracks rolled for the experimenters, so that there will be three-eighths of a mile left for laying on one of the suburban roads. This will furnish tests under all the varying conditions of traffic. Gen. Stone very kindly described the construction of the steel road to a *MOTOR AGE* man one afternoon this week.

"The steel road consists," said he, "of two flat steel tracks laid 4 feet and 6 inches apart, inside measurement, or 6 feet 6 inches over all. The tracks are flat steel plates 12 inches in width. They have edges the width of a finger above the surface and 2½-inch flanges

imbedded in the foundation, the outer one vertical and the inner one slanting toward the inside.

"These flanges are driven into the broken stone and gravel foundation by rammers. The foundation bed is 18 inches in depth and width. The larger stones are at the bottom and the smaller ones and gravel at the top. The parallel rails are 40 feet in length. They are fastened together to prevent spreading by binding rods attached to the rails by fish plates at intervals of 13 feet. At their ends also the rails are joined by fish plates. The foundation bed has a tile drain—an important feature of the construction.

"The steel road at Valencia, Spain, after which the present road is patterned, is two miles in length and has been in use seven years. It cost \$9,506 to build, of which \$6,890 was for steel. Although 3,200 vehicles pass over it daily on an average, it has cost but \$380 yearly to maintain, this almost entirely for repairing the road bed between the tracks. The cost of the annual maintenance of the stone road, which preceded it, was \$5,470."

At the Tuesday night talk at the Automobile Club, General Stone spoke particularly of the value of the steel road for motor vehicle highway or speedway. "An ideal automobile road," said he, "would be flat steel plates laid across meadows with grass between and no 'edges' to permit the machine from running off the tracks. An indented or scored surface would prevent skidding."

General Stone thinks the steel road the solution of economical highways in country districts. During the course of the discussion on steel roads W. J. Stewart, secretary of the Automobile Club of New Jersey, suggested that one be laid across the Jersey meadows to connect the Jersey City macadams with the thousand miles of stone roads radiating from Newark. General



Section of the Steel Road.

Stone was greatly pleased at the idea and suggested that the two clubs might build it by subscription and make of it an exclusive automobile highway. But four miles of road would have to be built. It is probable that a joint committee of the two clubs will soon be named.

Kilometer Record Again Broken.

A cable received from Paris states that M. Angieres, who last week reduced Fournier's mile figures to 46 seconds, Monday took from him his world's kilometer record of 29 1-5 seconds by scoring 29 seconds flat. The trial was run over the same course near Dourdan and the same Mors was used that was employed in the recent mile trial.

MORE SPEED IN RELIABILITY TESTS.

A. C. A. Members Favor Long Distance Speed Contest—New York-Chicago Race in Sight.

New York, Nov. 16.—Before the close of last Tuesday evening's club night talk at the Automobile Club of America the members were "jollied" by Vice President Scarritt, who presided in the absence of President Shattuck, into "speaking right out in meeting." The subject of discussion was the recent reliability run and future endurance tests.

The general opinion was that the six-day reliability run had been a complete and convincing demonstration of the practicability of the automobile that hardly needed repetition in its present form.

Two extremes for future contests were suggested. One party, whose opinions were set forth eloquently by E. T. Birdsall and Barclay Warburton, declared that the only real determination of the best automobile was by long distance races such as are held abroad.

"You can talk as you please," said Mr. Birdsall, "but the machine that gets there first in one of these long races is the best machine and it is always the machine that can travel a mile or a hundred miles the fastest."

"Let's have a race to Chicago," cried Capt. Warburton, "I'll go in it and I'll predict that Edge and a lot of the foreign cracks will come over for it. The people in the various towns will see that the road is kept clear if we give them some sort of a time schedule. Americans will soon get over their prejudice against fast going on the roads. When I drove the Philadelphia-New York coach at 20 miles an hour there was no objection, and when I had a bicycle rider carry a message from New York to Philadelphia to beat the mail they cleared Broad street for him."

Percy Owen favored a single day, non-stop run with the distance raised to 150 miles.

President Davis, of the N. A. A. M., said that whatever the distance or test was there should be a classification by retail price, as intending buyers watched these runs to see what machine was the best one for the money they had to spend. The suggestion of Mr. Davis met with general favor.

Mr. Scarritt said he was as fond of a speed scrap as any one, but that public opinion in the matter of speed must be respected and the speed laws must be obeyed. Incidentally he made the statement that, according to his recollection, eight machines of the 17 gold medal winners went through the recent run without a stop for tire troubles. He declared there were at least 15,000 automobiles in this country and that next year's output would be fully 25,000 machines. Mr. Scarritt's idea of a test is to start the machines out for some such distant point as St. Louis or Chicago, with an official observer aboard and a time limit for reaching the destination.

Tuesday night's talk has provoked much discussion in the trade. There seems to be an undercurrent of opposition to undertaking any more long runs under

the present plan, largely owing to the expense and the satisfactory demonstration already made.

A. A. A. Directors' Meeting.

New York, Nov. 17.—The directors of the American Automobile Association today held their first meeting since last spring. President Winthrop E. Scarritt was in the chair. Dr. Julian A. Chase, Rhode Island Automobile Club; Frank G. Webb, Long Island Automobile Club; W. J. Stewart, Automobile Club of New Jersey; A. R. Shattuck, Automobile Club of America; and S. M. Butler, secretary, were also present.

The matter of dues was thoroughly discussed. The high rate of three dollars per member of each association club has kept many clubs from joining. A special meeting is to be called for December 9, at which a reduction of one dollar per member and other amendments will be proposed. The Cleveland Automobile Club was elected a member and applications were received from the San Francisco Automobile Club and the North Jersey Automobile Club.

It was decided to make a vigorous campaign in favor of legislation by congress toward the building of the great military highway from ocean to ocean recently suggested by Gen. Nelson A. Miles. Members of all the association clubs will be asked to urge their congressmen to support a bill the association is to have introduced to this end.

The proposed continental road is to start from Boston, reach Chicago by the lake cities and San Francisco by the old overland route through Salt Lake City.

The matter of uniform state legislation in the licensing of operators was referred to the legislative committee, of which Jefferson Seligman is chairman.

Automobile Club of America's Annual Meeting.

New York, Nov. 17.—The Automobile Club of America held its annual meeting and election of officers tonight. There was no opposition to the regular ticket. The following officers were accordingly elected: A. R. Shattuck, president; W. E. Scarritt, first vice-president; James Stillman, second vice-president; W. K. Vanderbilt, Jr., third vice-president; Jefferson Seligman, treasurer; Col. John Jacob Astor, G. F. Chamberlin, Peter Cooper Hewitt, governors for three years; and Harlan W. Whipple, governor for one year, to fill unexpired term caused by resignation.

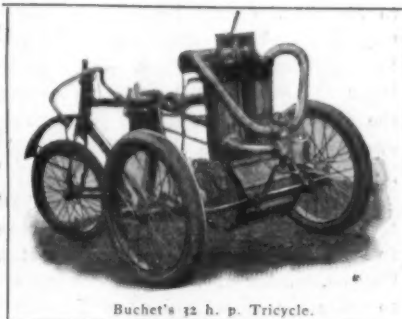
Secretary Butler reported the membership at 324 active and 68 associate members.

The literary introduction to the official figures of the reliability run was presented as the report of the contest committee.

President Shattuck wrote and made the report of the good roads committee. It set forth the participation of the club through its representatives in state and city highway improvement, legislation and crusades. The report also made known various direct contributions by the club to road building in several sections of the state.

FOREIGN NEWS and GOSSIP

Buchet, Well Known Maker and Inventor Dies Suddenly—Paris-Madrid Race May be Run in Two Sections.



Buchet's 12 h. p. Tricycle.

PARIS, FRANCE, NOV. 3.—Hardly without warning and at the prime age of 42 years, Elie-Victor Buchet, known to all motoring countries as the builder of famous speed automobiles and tricycles, died this week. It is said that overwork brought about anemia, which resulted in death.

One of Buchet's latest mechanical triumphs was a 32-horse power motor tricycle, the most powerful on record. This was intended for record shattering purposes. It is of double cylinder construction, the cylinders being 5 by 6½ inches bore and stroke. There is a band clutch between the motor shaft and the rear axle, but otherwise the transmission is direct, without reduction and without a differential.

M. Buchet at the time of his death was engaged in preparing an exhibition for the coming Paris show. It is not known whether or not his work will be carried on. He was not wealthy and the older of his two sons is but 17 years of age. It is notable in connection with his career that he built the motors for the airships made by Santos-Dumont, Severo and de Bradsy.

The discussion among the members of the racing committee of the Automobile Club of France concerning the exact character of the proposed Paris-Madrid race has not yet ended, but it is likely that both factions of the committee will be satisfied by a settlement which will divide the race into two sections, one for speed and the other for reliability. These sections would be called the "Challenge des Fabricants" and the "Course de Vitesse." The former, as proposed, would be a reliability contest for teams of three vehicles each. In awarding the credit marks for the performance of each machine a vehicle would be allowed the marks gained up to the time of stoppage should it be unable to finish. Thus, should the other two vehicles of the team finish in good shape the total of marks might still secure for the maker a creditable mark in the final classification.

The "Course de Vitesse" would be a pure speed contest in which manufacturers could not enter vehicles, the contestants being individuals. It is further proposed that, in order to prevent individuals from bringing discredit upon makers by entering old machines, etc., they shall not announce the name of the machine nor its horse power, etc., unless provided with the written permission of the maker.

On account of the wretched roads in Spain it is now proposed that instead of running the race from Paris to Madrid the start be made in Madrid and that the trip of all classes and sections be leisurely until the French frontier is reached. The actual race would then begin and would finish at the Bois de Boulogne before the president of France. This method of running the event was suggested by M. Renault, the winner of the last Paris-Vienna race.

The Automobile Club of France has chosen for its team in the Gordon-Bennett cup race one Mors and two Panhard and Levassor cars. It is probable that Gabriel, winner of the Deauville contest, will be chosen to drive the Mors, while the Farman brothers will be assigned to navigate the Panhards. Should one of the latter not be able to compete, Rene de Knyff will doubtlessly be chosen in his place.

The promoters of the late winter, or early spring, meeting at Nice have arranged the following program for the week of March 28 to April 5: Saturday, brake tests; Sunday, flower parade; Monday, Tuesday and Wednesday, races; Thursday, annual hill climbing test from Nice to La Turbie; Friday and Saturday, automobile show; Sunday, Baron de Cater's challenge cup race in the form of a one-kilometer hill climbing contest on La Turbie road.

In place of the road race from Nice to Abbazia, which was forbidden early in the season, the Automobile Club of Italy last week held a race meeting at Padoue. There were but two events, these being in the form of speed trials for the 10 kilometer and kilometer records, respectively. In the 10 kilometer event Montul made the best time of 9:01 for motor cycles; Storero with a Fiat car the best time of 7:51 for light cars, and Florio, Panhard, the best time of 5:21 for heavy cars. Florio also made the best time in the kilometer contest, covering the course in 36 seconds. The best light carriage time was 45 2-5 seconds, and the best motor bicycle time, 52 2-5 seconds.

The Automobile Club of Vienna will send an invitation to all automobile clubs to meet and co-operate with it in a general meeting to be held at the coming Paris automobile show. This congress is projected for the purpose of arranging a definite international system for the management of racing and also to appoint a standing committee to handle all automobile affairs of international scope. The invitations will be sent to the automobile clubs of France, Germany, Great Britain, Ireland, Belgium, Switzerland, Italy, the Netherlands and America.

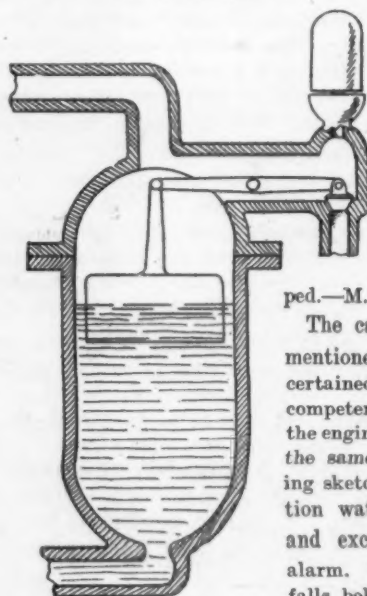
The governor of a French department or "state" has requested the French premier to be allowed to pass a law for his entire state regulating the speed of automobiles. In this way the mayors of the different cities and hamlets of his state will not be able to issue speed regulations which may differ from those of every other city. He pointed out that some mayors placed a limit of 5 miles, others 6 miles and others 10 miles, which is very troublesome to the drivers. He also suggested that the premier should take steps for a uniform speed limit for all France.

CORRESPONDENCE

Automatic Water Regulator.

Hooper, Neb., Editor MOTOR AGE.—I own a 1902 Mobile and ever since I began running it there has been a squeaking in the right hand cylinder when pulling up a hill or through sand. What is the cause of it? The oil pump works perfectly and I am sure the oil enters the cylinder, as it shows on the piston rod.

Also please explain the construction and operation of the automatic water regulator and low water alarm with which some steam automobiles are equipped.—M. T. Zellers.



The cause of the trouble mentioned could only be ascertained by having some competent mechanic take the engine apart and locate the same. The accompanying sketch shows a combination water level regulator and excess steam pressure alarm. When the water falls below the proper level the action of the float lever opens the small valve and allows the pump to force more water into the boiler. As soon as the proper level is regained the float closes the valve. When the steam pressure exceeds the desired limit the whistle blows, by reason of the steam pressure being sufficient to lift the valve from its seat. The same form of float is also used for a low water alarm, but instead of the valve opening being connected to the pump supply, the whistle is attached instead, so that when the float lowers the valve is opened and the whistle blown, thereby notifying the operator of the need of replenishing the water supply in the boiler.

Tandem Gasoline Motor.

Turrell, Ark., Editor MOTOR AGE.—I send with this a drawing of a double piston four cycle gasoline engine. The idea is to have alternate impulses in the two cylinder compartments, thus getting an impulse every revolution. Of course this engine would be somewhat longer than an ordinary single cylinder motor, but would also be more compact and cheaper to manufacture than an ordinary double cylinder motor. Furthermore, by cutting out one compartment of the

cylinder the speed and power might be reduced. I would be pleased to receive your opinion of it.—Charles E. Turrell.

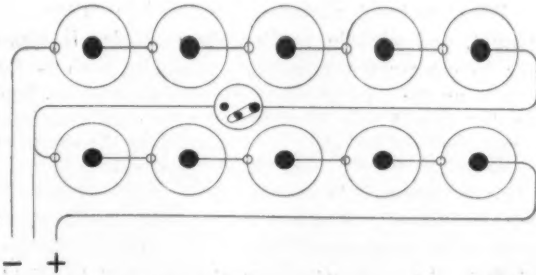
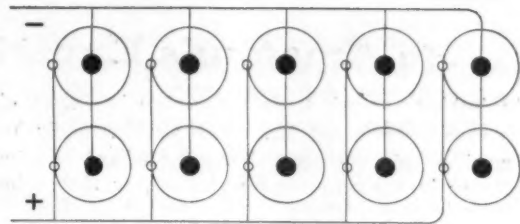
Such engines are in use in stationary gas engine practice in large units of power. Experience and actual tests alone can demonstrate, however, whether they would in small sizes be of cheaper construction and more economical operation than the types of double cylinder engines now in use.

Using Partially Exhausted Batteries.

Chicago, Ill. Editor MOTOR AGE:—Presuming you having nothing else to do but to answer "fool questions" in your valuable paper, and that you might possibly consider the appeal of a constant reader who has borrowed the paper for the last year and a half regularly every week, I submit a query. If you fear to advertise the fact that you do not know any more about this question than I do, an explanation by mail will suffice. My problem is as follows:

If it is a fact that more than 8 volts of electricity is undesirable in an ignition system for automobiles, would it not be good practice to connect up 10 cells of dry batteries, as per the diagram, after they had become weak by use; five cells of which can be used at a time? In this manner the voltage would be kept down, and at the same time a larger amperage would be attained, enough to create a big hot spark. I figure that this arrangement would run a double cylinder machine several hundred miles after the batteries had become so weak they would not run the engine at all when five of them are coupled up continuously, for when they become so weak they would not work satisfactorily in this way, the whole ten might be connected continuously without getting too much voltage. If something of this kind could be done, I think it would be a great saving, as I am unable to get batteries of this kind to last over 500 miles.—An Owner.

The sketch enclosed with the above communication, which is shown in the upper diagram in the accompanying illustration, does not show the two sets of cells coupled in parallel series as inferred in the letter, but are shown in multiple parallel, which would give only the voltage of one cell and current equal to the current value of one cell multiplied by the number

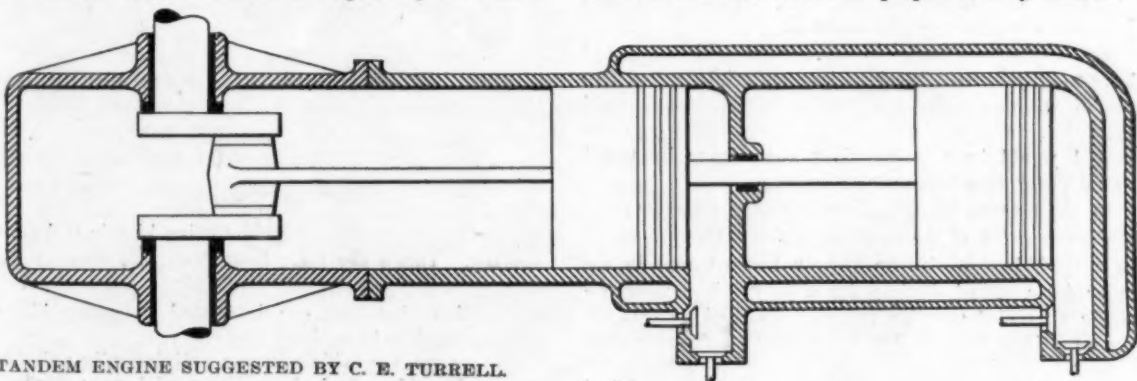


Diagrams of Battery Cell Connections.

of cells. This may perhaps be a mistake, or it may be a new way of connecting the cells in series, with which MOTOR AGE is not acquainted.

The lower diagram in the drawing shows the proper way to connect up the two sets of cells so that they may be used, one set at a time, and afterwards used as a whole, when partially exhausted. The cells should be connected with a switch in the series between the two sets. Either set may be used independently when the switch is open, by making connection to the center wire and one of the outer wires. After the cells are partially exhausted connections should be made to the outer wires only and the switch between the two sets of cells closed. The two sets will then be in series. As to the question of using more than eight volts for ignition purposes this will depend entirely on the resistance of the primary circuit of the induction coil and the speed of the motor.

If the two sets of battery cells are coupled in series as shown in the lower diagram, the combined electromotive force of the cells would be from 8.7 to 10.00 volts, and would not be too high for practical use, as the current value would be proportionately smaller.



TANDEM ENGINE SUGGESTED BY C. E. TURRELL.

An Amateur's Experience in Auto Building.

In looking through trade papers one is almost always sure to read that Mr. Wisely or Mr. Surely has invented or built a successful automobile and is going to engage in the manufacture of same, or that a big company is being formed to turn out about three or four complete machines a week, using twenty or twenty-five hands. I seriously believe that it is an utter impossibility to build a successful automobile on the first attempt, and while in reading these articles it seems easy to construct a practical automobile, such is far from being the case. I relate my own experiences, hoping that it will help other amateur builders, especially of gasoline machines, to carefully consider the situation before undertaking to build an automobile.

In my opinion it is the desire to own an automobile and the lack of means to buy one that has prompted many men in the endeavor to make their own machines in the expectation that the cost will be slight. This is what got me into the game; this is what made me give up the pleasant society of my family. Many a night and Sunday has been spent by the milling machine, lathe or bench instead of at home, and many a night I lay awake studying on this problem which I thought was so easy. I thought, like so many others, that I had automobile building in a nutshell, for I had studied the problem a good deal in papers and on paper.

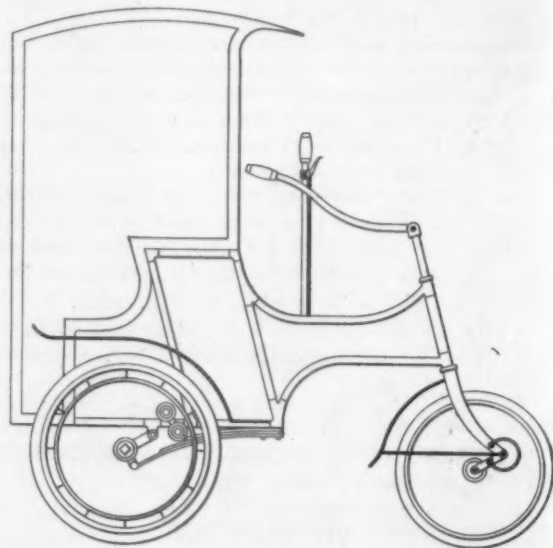
In 1895 I first saw an automobile and had a ride in one. It was enough to enthuse me, and all spare time was then spent figuring how to make an automobile cheaply. I figured in the same trend as nearly all other amateur builders. I would use tandem or carriage tires, light wire wheels, some cheap running gear, and so on; and for motive power I thought a 2½-horsepower air-cooled motor would be about right. It would be very nice to camp out at a nearby lake, for my wife would take me to town to my work in the morning and come after me in the evening with that automobile; while on Sundays I would hitch on a trailer and take my sister and brother-in-law out to camp. The quality of those calculations has later on surprised me many times, but it must be remembered that this dreaming was away back in '95 and '96, when but few facts were obtainable concerning automobiles.

My original estimate of the cost was that I would have to spend about \$150 for raw material. I had free use of machine tools, and I thought that \$150 would more than cover the actual cash outlay. Had I known that I would have to multiply that figure by ten I would never have started.

In the summer of '98 I saw my way clear to start the construction of the machine, which I thought would be a world-beater. To an eastern house I sent in my order for a set of castings for a 4 by 4-inch 3½-horsepower air-cooled gasoline engine. I waited months for these castings to come, but while waiting I constructed a spur gear differential. Then, instead of getting the motor castings, my money was returned to me, so I had

to look around for something else. There was an automobile delivery wagon used by a department store solely for advertising purposes. This wagon was in charge of a small boy, with the consequence that it was almost daily brought down to the machine shop next to the one where I worked to be repaired, etc. The owners were doubtless tired of the rig, and I bought it for \$100 cash. It now took me nearly a week to tell all my friends what a great bargain I had made. This wagon was in reality Max Hertel's first experimental wagon with a delivery body, which had been put on here.

I had now a complete automobile with a double cylinder gasoline engine. When I got to the stable where the rig was kept I found that I could not start the engine, and was forced to push the wagon home. Should I ever have to push an automobile through the business portion of Minneapolis again I would surely plug my ears. My first work now was to try to get the engine to run, but it was indeed as balky as the proverbial mule. It was not two weeks until I purchased a complete new set of batteries, consisting of six Edison-Leland cells. There was plenty of current, but on closer examination I found that the insulation was not good. This fault remedied, I managed to make the engine run, but soon learned that the transmission device was not only poor, but bad. There may be many readers that have never seen or heard of a Hertel carriage. In *MOTOR AGE* of June 28, 1900, can be found



The \$100 Bargain.

an illustration of an automobile using bicycle forks for steering. That's the rig. Regarding this copy of the paper, I must say that it contains so much valuable information that any one interested in automobilism cannot afford to be without one.

How to get the vehicle to run satisfactorily agitated me considerably. It had no differential gear, depend-

ing on slippage for rounding a corner, and had only one speed. It could not climb a steep hill or run on muddy roads. That I could not use the delivery body was apparent, and finding no way of disposing of the same it only took twenty-five minutes to make kindling wood out of that \$35 box.

My next step was to make a differential gear for the counter shaft. The first one I had made was for a rear axle. I decided to use a friction device, similar to those found on drill presses, using the engine fly wheel for driving disc. I constructed a very ingenious contrivance for bringing the two discs together; in fact, I had only one lever for starting the engine, shifting the movable disc, and controlling engine. In the center of the fly wheel I had a two-inch disc, which ran on balls. It might have been termed a ball-bearing brake. Two chains were employed—and are yet used—one on each side driving the corresponding rear wheel.

Right here was spent a good deal of money and labor, as I had to make new rear hubs and wheels, new rear axle, radius rods and the power transmitting device—but, then, my friends were telling me I had the world by the tail and all I had to do was to wag it! Even experienced mechanics were loud in their praise about this device; but they were evidently as ignorant as I about the requirements of an automobile. The tail wagging was soon to be enacted, as I was now ready to take the carriage out on the street to try it. But that fine mechanical transmission device of mine proved to be lacking in many respects, and after trying it out in good shape I gave up in despair.

In its place I substituted a belt drive, which was easy and cheap to make, and it was so far superior to my friction drive that I decided to drive home, a mile and a half from the shop where I was doing the work. Everything proceeded nicely for three-quarters of a mile, until I started to cross a street car track. A rail was sticking up about three inches above ground, and before I knew it there was my four-wheeler converted into a three-wheeler—as I had intended to make in the first place, the only difference being that one rear and one front wheel were running in the same track instead of snowplow fashion.

The cause of the accident was that the steering connection rod between the front wheels had broken. I used the old rod, which must have shrunk or crystallized. I had had three-quarters of a mile of good riding, and why I did not stop before I struck that car track and write to the trade papers that I had built a very successful automobile and that a big stock company was to be formed with \$125,000 capital, of which \$100 was paid in, has ever since been a bitter reflection. I have seen such accounts of stock company formations.

I stopped the rig after passing over the tracks and found in examination that nothing else was broken, so I picked up the segregated front wheel, placed it alongside of me in the seat and rode home a la Duryea. Do I need to say that my neighbors were craning their necks to see what kind of a freak automobile I had?

I had noticed before the front wheel broke that the running gear was rather stiff, and the illustration shows

what kind of a front spring contrivance I had made to increase the ease of riding. Comparing this with the illustration in the issue of June 28, 1900, and it is noticeable what a lot of work I had put on the rig. The first Sunday I had the carriage out after the new spring



The Rebuilt Carriage.

forks were made, I left it standing in front of my house, and when I came out to take it away there was a big crowd gathered around it. I was taken aside by a man who had the promoting bee in his motor bonnet and he told me that I had the simplest rig made and that we ought to organize a big stock company and that I would get rich on the high-speed gear. Now, by this time I had learned that instead of having a good, serviceable vehicle I had a noise-producing claptap, which nearly every Sunday morning I was tempted to run into the Mississippi river and be done with it. But what this man told me gave me courage, for by it I learned that he and many others were not able to see all, or maybe not any, of the faults and weak points. So I proudly told him I could not consider his offer.

A month or so later, after I had made quite a few improvements, I went out riding and when I returned to my house that same man was there and again approached me on the subject of a stock company. I took him out for a ride, and when we were going as fast as we could he asked me to "let her out a little!" I found a good excuse in the condition of the roads.

For awhile I continued experimenting, and I saw it would take much more money and time to perfect the vehicle; so I went to this persistent company man and told him I would like some financial help. He told me he did not want to put in any of his own money, but that he would induce some of his friends to do so. That settled my connection with him.

By this time I was satisfied that I was not getting all the power there was in the engine. I laid the blame to the carbureter, so I went to a machine shop and borrowed a carbureter that had been used for testing gas engines. This seemed to be a perfect device; a sur-

face carbureter with ample surface to give a good vapor. I connected it to the engine with a hose, and, sure enough, I obtained more power. I ran the engine awhile, but was soon startled by seeing the carbureter on fire. It had backed fired and now there were a few moments of excitement, but I managed to get the carbureter outside of the building as a burning mass, with three gallons of gasoline in it. Had it exploded I would not now be writing this article, but it simply burned and the flame finally died out from lack of air.

Had I put a few wire gauze washers in the intake pipe this fire would not have happened, as it is a known

fact that fire will not get through a fine wire mesh. I have now three wire gauze washers (No. 60 mesh) in the intake pipe, and I have held the valve open while the ignition occurs, but have never succeeded in setting carbureter on fire. After the fire experience I started to make a mixing valve, as described in a trade paper, but it proved to be no better than what I had before. Then I read in the *MOTOR AGE* a description of a James mixer and I procured one. That ended my trouble with mixing valves or carbureter. This valve is exceedingly cheap, but does the work in good shape.

(To be Concluded.)

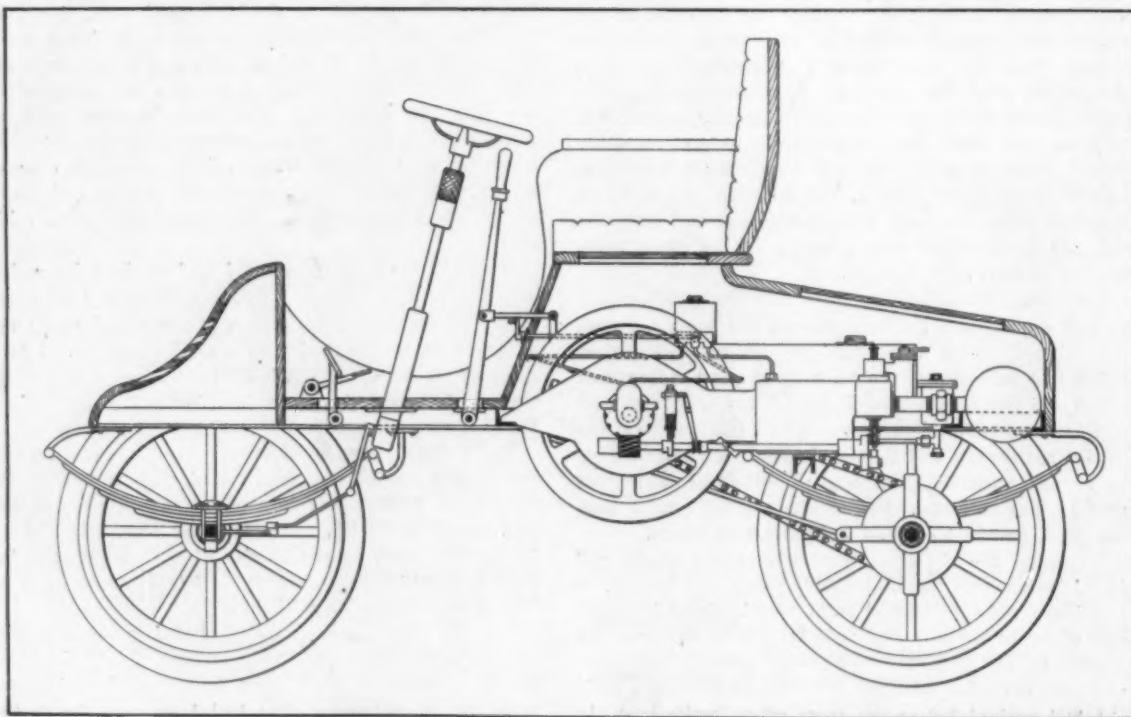
The American, a Promising Light Carriage.

Among the numerous moderate and light weight gasoline cars which will be more or less prominent in the trade next season is the American, made by the American Motor Carriage Co., of Cleveland. This carriage is the result of a study to combine simple, plain construction with a length of wheel base, body proportions, running gear and spring structure, etc., which will be conducive to more comfort in long rides over rough roads than is afforded by the ordinary style of small runabout. The machine is well made and is of trim design. The western sales interests have been taken in hand by Pardee & Co., of Chicago, who will push it vigorously in their territory.

The carriage weighs about 1,000 pounds, has a low center of gravity and a long wheel base, which tends toward the quality of easy riding. It is equipped with

a single cylinder, horizontal gasoline motor of 5-horse power, brake test. The motor is water cooled, with a gear driven pump and a water tank, but no radiator. The tank has a capacity of 4 gallons. The hood or bonnet which serves as dash encloses the water tank. Wood wheels of the artillery type are used. The car has wheel steering. The two forward speeds are controlled by the lever shown at the right hand of the seat, and the reverse and ignition regulation by foot pedals. Starting is effected by a crank placed on the motor shaft extension, which projects through the opening shown in the side of the body.

A side sectional elevation of the carriage is shown in Fig. 1, which illustrates clearly the exhaust valve and ignition mechanism. The lubrication is effected by means of a gravity feed from a small tank to the right



THE AMERICAN GASOLINE CARRIAGE—FIG. 1.

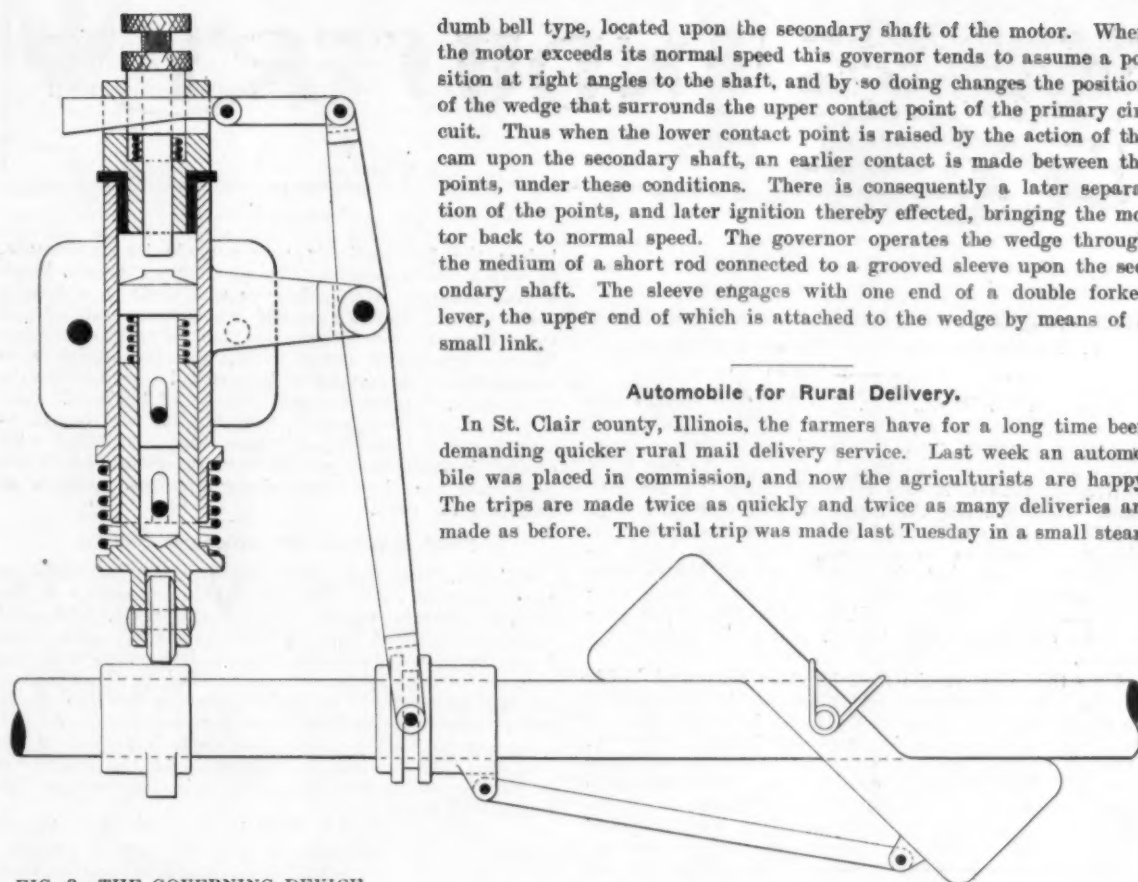


FIG. 2—THE GOVERNING DEVICE.

of the fly wheel and on top of the gasoline tank. The oil is turned off and on by the same lever which operates the battery switch. The ignition is of the jump spark type, and is operated by a cam on the secondary shaft, to the right of the two-to-one gearing which drives it. All contact points are enclosed in a dust proof case, and so arranged as to give a firm contact.

The carbureter is of the Longuemare float feed type attached directly to the inlet valve chamber. It is fed by gravity from the gasoline tank which is placed on the right hand side of the frame and carries seven gallons. The muffler, which is located transversely in the rear of the body and directly behind the motor, is of large size and practically deadens the noise of the exhaust without perceptible back pressure. The transmission is of the planetary type with two speeds forward and reverse. The motor speed may be also regulated by means of a throttle on the carbureter. This is controlled by a foot pedal.

The frame is of 2 by 1½-inch angle steel and is carried upon semi-elliptic springs. The front and rear axles are fitted with ball bearings, and the wheels have 3 by 30-inch tires.

Figure 2 shows the governing device which automatically regulates the timing of the point of ignition. This action is effected by a centrifugal governor of the

dumb bell type, located upon the secondary shaft of the motor. When the motor exceeds its normal speed this governor tends to assume a position at right angles to the shaft, and by so doing changes the position of the wedge that surrounds the upper contact point of the primary circuit. Thus when the lower contact point is raised by the action of the cam upon the secondary shaft, an earlier contact is made between the points, under these conditions. There is consequently a later separation of the points, and later ignition thereby effected, bringing the motor back to normal speed. The governor operates the wedge through the medium of a short rod connected to a grooved sleeve upon the secondary shaft. The sleeve engages with one end of a double forked lever, the upper end of which is attached to the wedge by means of a small link.

Automobile for Rural Delivery.

In St. Clair county, Illinois, the farmers have for a long time been demanding quicker rural mail delivery service. Last week an automobile was placed in commission, and now the agriculturists are happy. The trips are made twice as quickly and twice as many deliveries are made as before. The trial trip was made last Tuesday in a small steam

carriage. This route is twenty-five miles long, over all kinds of rough roads. The time ordinarily required to cover it with a good team of horses is from four to four and one-half hours. The automobile left the Belleville postoffice at 9:15 o'clock Tuesday morning. The route was covered and all of the mail matter delivered and collected, and Carrier Bonville registered at the postoffice again at 11:35 o'clock, while with his horse and buggy he had never gotten back until 2:30 o'clock in the afternoon. Seventy-five stops were made on the route. The average time of each stop was thirty-five seconds. The actual time, therefore, in going over the route was one hour and forty-two minutes.

Freight Truck Service Projected.

A Brussels firm has applied for a twenty years' concession from the city of Liege in Belgium, to organize a merchandise transport service for merchandise. It intends to put into service trucks driven either by alcohol or gasoline and having a speed of about 6 miles and a capacity of 13,250 pounds.

The city council of Minneapolis has an automobile regulation ordinance under consideration. Heretofore automobilists have been without restriction other than that of the common law.



PROMISE OF GREAT INTEREST.

Minneapolis to Become the Automobile Trade Center of the Northwest—Good Streets and Roads.

MINNEAPOLIS, MINN., Nov. 17.—Eighteen months ago an automobile was a rare sight in Minneapolis, and whenever one was seen it caused no little comment. But if this city has been slow in adopting the new form of transportation, it has certainly made up for lost time. Last summer the machines sold and used were practically all steam, with a few electrics, but practically no gasoline automobiles. This has been reversed this year. Late in the fall of 1901 the Oldsmobile made its first appearance and two or three were sold that fall. Up-to-date 150 Oldsmobiles have been sold by the Minneapolis agents, nearly all to city customers.

Late this summer the first Rambler came and inside of six weeks twenty-six of these machines were sold to city residents. These two vehicles have had the best sale, as far as number is concerned. There are several Winton touring cars in town and more would have been sold, had there been more to sell. There are three Knox carriages of the 1902 pattern and one of the three wheelers. Several Autocars have been sold and the Freidman, Cleveland, Buffalo and Peerless are represented by one or more of each. There are also a few foreign machines.

Minneapolis is surely a splendid place for automobiles, with its suburbs, level streets and fine boulevards and suburban drives. All parks open to horse drivers are equally open to the automobilists. There are as yet no special laws governing automobiles; no regulation regarding speed, license, tags, numbers, or anything else. The speed craze has not struck town as yet, however, although two automobile race meets have been held at the Minnhaha driving park.

With the advent of the automobile there also appeared upon the arena the automobile experts. As long as three years ago there were signs hung in several places announcing to the public that automobile experts were within—expert repair men on tap. The proper sign in most cases should have been: "We are willing to experiment with your automobile and will charge you full time whether we make a good repair or not. We are willing to learn, but expect you to pay for it." Minneapolis has also had its automobile experimentors, but as yet nothing has materialized in the way of a busy automobile factory. Nearly every machine shop in the town has built a machine, but apparently it has been both the beginning and the end. There was the Blood & Mille concern, incorporated for \$500,000. It built two experimental cars and that was the end.

What gave good promise was the Republic Motor Vehicle Co., which was awarded the contract to carry the mails between the main and subdivision post offices and to collect from the mail boxes. Five delivery wagons were to be used and the service was to begin January 1 of this year. But at that time the company was not ready with its wagons and three weeks passed

before the first delivery wagon made its appearance. It was a fine appearing, electric delivery wagon, handsomely painted. Its initial run was made in a driving snow storm. Later a second wagon was put on and these wagons were doing good work when the company became financially embarrassed, and its affairs were wound up by a law suit. The suit is yet pending in the courts, but the company is out of business, while the street car company is handling the mail again as before. Had this company been amply provided with capital it would surely have been successful, for it cut deep into the time required by previous methods of handling the mail.

Final Settlement of Chicago's Cab Co.

Chicago, Nov. 18.—With the payment of \$1.50 on each share of stock, the liquidation committee of the Illinois Electric Vehicle Transportation Co. will wind up the affairs of the concern in a few weeks. The funds for the distribution have been received from the sale of the real estate formerly owned by the company on Michigan avenue to the Standard Office Co. Some money also was realized from the chattels of the cab company. Altogether, the sum to be returned to the investors will amount to \$260,000. As the shares are of \$5 par value the liquidation will represent a loss on each of \$3.50.

The Illinois Electric Vehicle company was formed when the automobile was on its first wave of popularity. No limit was set to the possibilities of the cars. The concern began on a large scale, with cabs and carriages of every kind, and its turnouts were familiar sights in the city streets for a season.

The continued deficit in the financial showing of the corporation led its officers to give up the undertaking and proceed to close out the property as best they could. The wretched street paving of many Chicago streets, causing abnormal repair expenses, was one of the chief hardships tending toward the closing of the business.

Gash Is Honored.

At a meeting of the directors of the Fournier-Searchmont Co., of Philadelphia, Pa., last week, W. D. Gash was made general manager. In view of the present extended operations of the company and its projects for future enlargement, Mr. Gash's new position becomes both an honor and a responsibility.

The board of directors of the Searchmont company now consists of the following: president, G. Blum; secretary and treasurer, B. H. Warburton; T. B. Wanamaker, E. M. Robinson, E. R. L. Gould, Spencer Trask and Acosta Nichols. All of these gentlemen are well known in the eastern business and financial world. The factory force will remain the same as before, with L. S. Chadwick, superintendent, at its head in the new shops at Trainer.

Movements in Cleveland Trade.

CLEVELAND, Nov. 15.—The Cleveland Automobile & Supply Co. has been granted a permit by the building inspector to make extensive improvements and additions to a large building on the north side of Vin-

cent street. The company has its plans drawn and everything is ready for the work on the building. The deal for the property was made some time ago, but the papers were not signed until within the last day or two. It is proposed to have one of the most complete automobile depots and repair shops in this section of the country and if all the plans are carried out the company will be able to build automobiles, if necessary.

The White Sewing Machine Co. was also granted a permit to erect an automobile station on Rockwell street. The building alone is to cost \$35,000 and when fully equipped with all the accessories needed the cost will be much beyond this figure.

A permit has been granted the American Ball Bearing Co. to build a small addition to its factory on Clarkwood avenue.

The Peerless Motor Car Co., organized here, but incorporated in West Virginia some weeks ago, has been authorized by the department of state to do business in Ohio. The capital stock is \$300,000. M. L. Blanchard is the president of the company and L. H. Kittridge is the secretary and treasurer. This is the reorganization of the well known Peerless Mfg. Co.

Automobile Welcome in Japan.

San Francisco, Cal., Nov. 15.—After four years' residence in Yokohama and Tokio, Japan, Manager J. W. Thompson, of the Japanese department of the Locomobile Co. of America, sailed into this port three days ago and left yesterday overland for New York. He spoke of Japan as an automobile field of good promise and said that he had readily found customers for several shipments of machines received this year; that the steam rig has the call in his territory, especially in hilly Yokohama, whose many roadway inclines run from 16 to 40 per cent, but that in Tokio, a city built upon the level, with driveways equal to any found in American cities, there is a good show for other types of motor vehicles. Of such the Olds, the Buffalo and Toledo are now in use there.

There are no speed limits in Yokohama or Tokio, and when, last month, Mr. Thompson drove on one of the streets at a 30-mile-per-hour gait, nothing but admiration was displayed by the onlookers, and none made complaint. No obstacles to automobile promotion in Japan are put in the way by the authorities. "A few days before my departure from Japan I made a record run," said Mr. Thompson, "driving from my Yokohama to my Tokio store in 52 minutes, the distance being 22 miles."

Remington May Reorganize.

The Remington Automobile and Motor Co.'s plant in East Utica, N. Y., has been idle for about two weeks and has recently been levied upon, against it there being several executions. It has been understood for some time that the company was somewhat embarrassed. It is probable that a reorganization will be effected. Secretary Graham, when questioned, stated that he had nothing whatever to say except that there might be a reorganization.

French Sales to England.

During June French manufacturers exported two hundred and thirty-one automobiles to England. Their value amounted to \$382,365. The export of parts during the same months amounted to nearly \$45,000. During the first nine months of the year French automobiles and accessories sent to England amounted to \$1,862,745, whereas the imports from all other countries to England during the same time reached only \$520,400.

INFORMATION for BUYERS

Few Changes in the Olds.

The Olds Motor Works, of Detroit, announces that there will be no change in the general appearance of the Oldsmobile runabout for the coming season. The company does not restrict its improvements and changes to exact seasons and is even now sending out machines fitted with the new mixing valve, which was used successfully on the machines in the New York-Boston reliability test, and which will be a feature of the 1903 carriages. One other notable change in the Oldsmobile is that both front and rear axles are trussed. The machines now leaving the factory as fore-runners of next season's shipments also have several minor changes and improvements, but in the main the carriages are the same as the 5,000 now in use.

One of the Largest Repair Shops.

The repair shop of Smith & Mabley, of New York, American agents for the Panhard and Renault machines and distributors of the American C. G. V. car, is really the most extensive department of their notable establishment. Mr. Mabley piloted a Motor Age man through it recently.

The shop occupies a room about fifty feet square on the second floor. It is fitted with a large assortment of American machinery.

"Pretty nearly all the important repair work on the leading foreign machines," said Mr. Mabley, "in use in New York is done by us. We also have repair jobs sent us from all over the east and from as far west as Cincinnati. These repairs amount, in many cases, to a practical rebuilding of certain parts. We have facilities, in fact, for building an entire automobile so far as its machinery goes. When a machine comes in with a broken or defective part we make a new one outright, and in many instances alter the construction according to our own ideas. Most customers would rather have us make a new part than to wait for one from the other side.

"It is a mistake to think that ours is essentially a foreign shop. It is not. We employ thirty machinists and all of them are Americans but two. The two are Frenchmen, whom we employ exclusively in assembling. The Americans are far better machinists and tool makers. At first we employed Frenchmen, but brought in Americans, who quickly learned the peculiarities of foreign construction and now teach the new hands.

"Our repair business is large. You see before you seven machines in different stages of repair. There are a dozen in the cellar waiting their turn. I suppose we turn out a half a dozen repair jobs a day. This branch of our business is growing so rapidly that we are going to give the entire floor of the main building to the shop and put our offices in a gallery in the new C. G. V. sales garage.

"The number of American chauffeurs is increasing rapidly. There are, of course, those who think it more 'swagger' to employ Frenchmen, just as there are those who consider English coachmen the correct thing. The cases where very big wages are paid chauffeurs are those where the chauffeur has marked skill as a machinist and repair man as well as driver."

The new garage mentioned, which is on the corner of Thirty-eighth street, adjoining the old one, is completed all but the decorating and building of the gallery. By the first of the month C. G. V. cars will be

gin to arrive from the factory at Rome, N. Y., and be placed on view and sale.

The C. G. V. of A., by the way, will turn out cars of 10 and 25-horse power as well as the 15-horse power model originally introduced.

Mr. Mabley says that he is looking forward with great pleasure to his visit to the Chicago show, which will give him a chance to study the great field the west is opening to the American manufacturer.

Keim's New Catalogue.

John R. Keim, of Buffalo, N. Y., has issued his catalogue of bicycle and automobile parts and fittings for 1903. The pages devoted to automobile parts show a full line of materials for steam vehicle construction, including the Keim steam engine. The running gear parts are especially noteworthy. They are designed for the construction of standard pattern tubular frames.

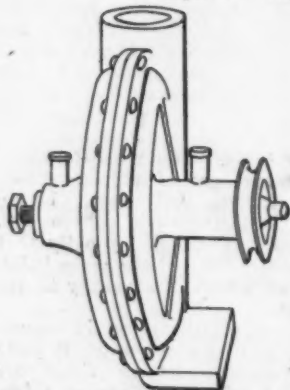
A Rubber Tire Formula.

The Goodyear Tire and Rubber Co., of Akron, O., in affirming by postal card that its new line of single tube motor tires surpasses anything hitherto produced, facetiously gives a formula by which a single tube tire may be made, this formula being guaranteed to produce a tire which is about diametrically opposite in grade to Goodyear tires. The formula given is this: $\frac{1}{4}$ pound pure rubber, 10 pounds scrap rubber, 16 pounds lead, 11 pounds iron filings, $62\frac{1}{2}$ pounds clay; total 100; one ply best muslin to each tire.

For Makers and Repairers.

While it is the business of the Garvin Machine Co., of New York, to make machine tools for use in all lines of manufacturing business, the company is devoting especial attention to the outfitting of automobile factories and of automobile garages or repair stations. The Garvin tools are well known to the general machine trade and the recently issued catalogue shows the great scope of the line. Information in the catalogue will be supplemented upon request, by definite information relative to the especial purposes and needs of the inquirer.

Pumps for Water and Air.



made of brass throughout. Mr. Dyke also markets a line of foot and stationary base pumps for tire inflation.

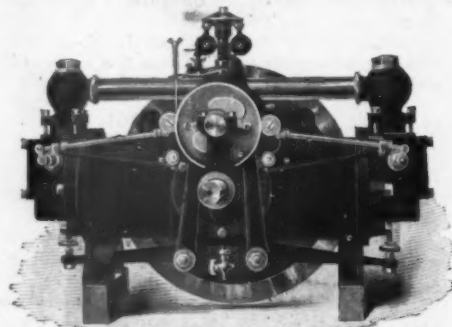
Books on Motor Topics.

The MOTOR AGE is prepared to furnish to its readers any of the following recently published books on subjects of interest to automobilists, experimentors and

manufacturers: Gas Engine Construction, Parsell and Weed—\$2.50; Gas, Gasoline and Oil Engines, Hiscox—\$2.50; Gas and Oil Engines, Clark—\$4; The Gas Engine, Grover—\$2; Gas, Oil and Air Engines, Donkin—\$7; Gas and Petroleum Engines, Robinson, two volumes—\$8.50; The Otto Cycle Gas Engine, Norris—\$3; The Gas Engine Handbook, Roberts—\$1.50; The Heat Engine, Diesel—\$2.50; Gas Engines, Lieckfeld—\$1; The Oil Engine, Goldingham—\$2; The Gas Engine, Warwick—75c; Theory of Gas Engines, Clerk—50c.

The Westerfield Motor.

One of the recently introduced gasoline engines of the double cylinder moderate size type for use in automobiles, is the Westerfield, manufactured by the Westerfield Motor Co., of Anderson, Ind. This motor is shown



The Westerfield Motor.

in the accompanying illustration. The main box forming the bed, crank case and water jackets for both cylinders, is cast in one piece. The cylinders are designed to be slipped into this casting, providing a water space, and are so designed as to have no joints or packing of any kind between the water and the explosion chamber.

One exhaust cam serves for both cylinders, and is of large diameter, giving easy rise on cam surfaces and making the exhaust valve mechanism almost noiseless. The inlet valves are operated by the suction of the pistons. The device by which the speed of the engine is controlled is operated by a governor or manually, at the will of the operator. The speed can be varied from 125 to 1250 revolutions per minute. In this connection its maker recommends the use of the motor without speed clutches. Electric ignition of the make-and-break type is employed. One spark cam serves both cylinders, and is automatically controlled by the speed of the motor.

One of the objects sought is to use the smallest amount of gasoline possible by throttling and by exploding the mixture at the most advantageous point to derive the most power from it. The mixing valve requires no adjusting after being properly set, and automatically shuts off the gasoline supply when the motor is stopped. For automobile use each motor is furnished with a device for holding open both exhaust valves when coasting—stopping the gasoline supply and cutting out the ignition, and at the same time cooling the motor by taking in and expelling cold air through the exhaust valve opening. The device is operated by a foot pedal, the motor resuming its work on release of pressure. Lubrication is from the crank case. All gears run in oil, being inside the crank case.

Don't look for gasoline leaks with a bicycle lamp or lighted matches; you may regret it.



Solar Motor Lamps



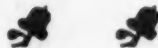
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THEIR STANDARD LAMP EQUIPMENT.**

A test will convince you and our prices will get your
business. We want to hear from you and submit sam-
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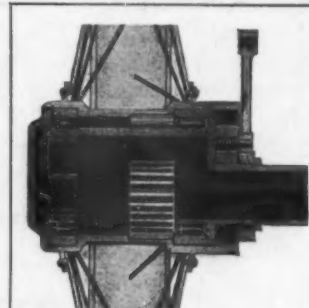
to use an inferior article when you can save money by using our products?

You Take no Risk

on the quality of our goods, as we make only the best. Never buy "just as good" when you can get the best for the same price.

Times Have Changed

so have methods of doing work, and it will pay you to equip your automobile with our complete running gears, with differential and live shaft without friction or end thrust of any kind.



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TOO

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A postal brings our Catalogue.

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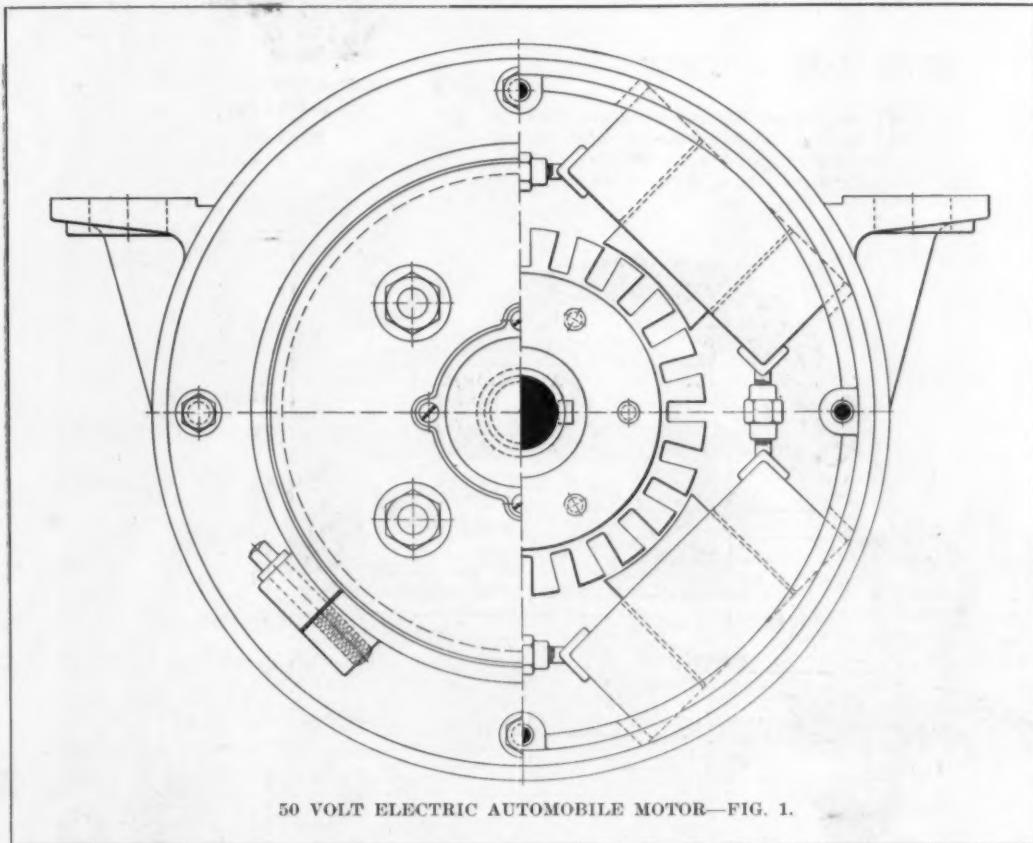
50-VOLT ELECTRIC AUTOMOBILE MOTOR

PART 6.

While it is a well known fact that a motor of high voltage is more economical in the use of current than one of a lower voltage, this efficiency is more than offset by the additional amount of work and care involved in the examination and testing of the extra number of cells required in the case of the high voltage motor. Furthermore such testing should be done by an expert.

riage. Especially is this true in the case of light vehicles, in which field its advantages are more pronounced and its disadvantages less apparent.

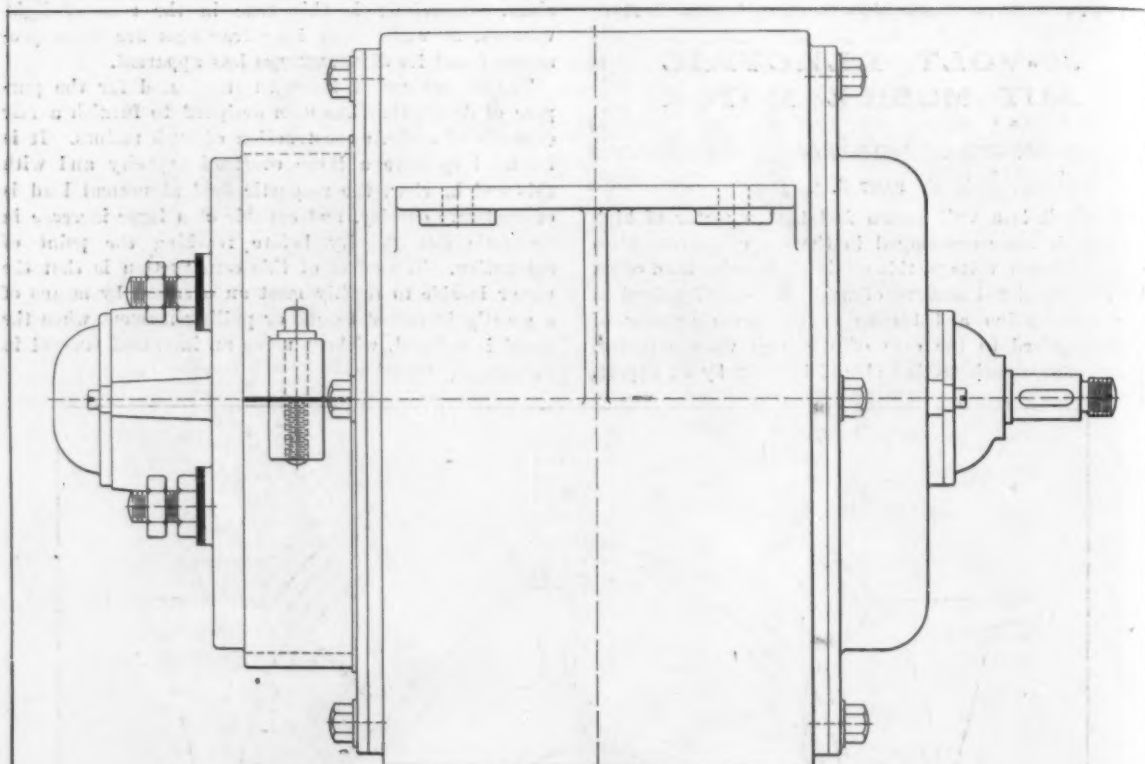
The 50-volt motor herewith illustrated for the purpose of description has been designed to furnish a fair example of modern construction of such motors. It is intended to have a large overload capacity and with this end in view, the magnetic field at normal load is of moderate density, and capable of a large increase in magnetic flux density before reaching the point of saturation. The effect of this construction is that the motor is able to readily meet an overload by means of a greatly increased torque or pulling moment when the speed is reduced, without using an increased current in the same proportion.



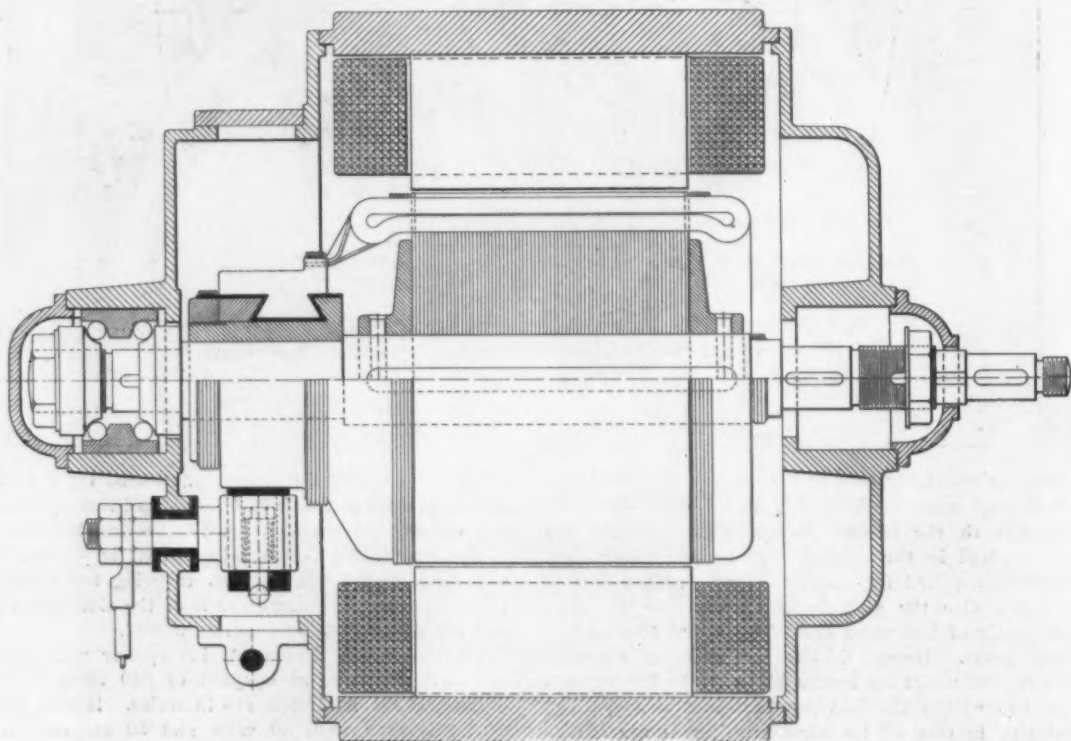
As a rule about forty cells of battery are used with the high voltage motor, while only twenty-four cells are required with the 50-volt motor, thus avoiding the work involved in the refilling and testing the sixteen extra cells required for an 80-volt motor. The 50-volt motor has also the advantages of slower speed, and consequently of less noise and of wear and tear on the moving parts. Hence, despite the primary economy of the 80-volt motor for automobile use, the low voltage motor has within the last year attained a surprising popularity in view of the almost universal use of the high voltage motor in the earlier days of electric car-

The motor is of the four-pole, encased type, with the cast steel magnet frame and the poles in one piece. The end covers, which also form the bearing brackets, are of aluminoid, and the armature shaft is provided with adjustable ball bearings, thus reducing the friction to the minimum. The armature is of the slot-wound type, and the field magnets are series wound.

The motor will develop $2\frac{1}{2}$ horsepower with 50 volts and 37.5 amperes, at a speed of 540 revolutions per minute, if the field coils are in series. It will develop $3\frac{1}{2}$ horsepower with 50 volts and 50 amperes at the same speed with the field coils in parallel series. More



50 VOLT ELECTRIC AUTOMOBILE MOTOR—FIG. 2.



50 VOLT ELECTRIC AUTOMOBILE MOTOR—FIG. 3.

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for very heavy vehicles. Particularly adapted for use where proper strength is required and length of service is guaranteed.

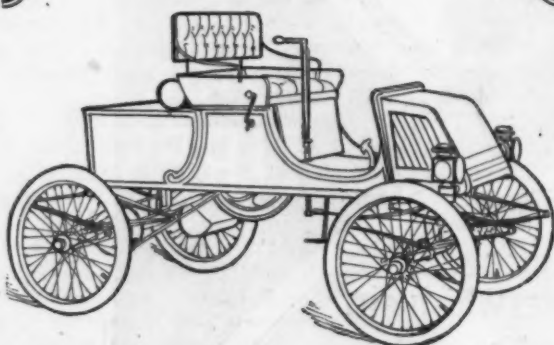
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years; the same reputation is be-
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equal to the \$2,500 kind, but at
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CLEVELAND: 411 Euclid Ave.

than 4 horsepower can be developed with the field coils in parallel, but it should be exerted for only a short period of time on account of the tendency to overheat the motor.

Four brushes are provided so as to reduce the current capacity both in the brushes and commutator, as they are run under normal conditions in parallel. For light loads, however, the two sections of the armature may be run in series with very economical results, by a suitable arrangement of the controlling device.

The motor is designed to be hung or suspended from the running gear of the vehicle, instead of being mounted on the axle as has been heretofore customary, thus relieving the motor of all shocks or jars due to irregularity of road surfaces. The rear wheels of the vehicle are to be operated by means of a sprocket upon the differential gear, driven by a chain from the sprocket on the motor shaft.

Figure 1 is an end view of the motor, with right half of the end cover removed so as to clearly show the construction and arrangement of the armature core, pole pieces and field coils. The armature core is 6 inches in diameter and $4\frac{1}{2}$ inches long. It has 24 slots, $\frac{3}{4}$ of an inch wide and $\frac{1}{8}$ of an inch deep. The poles are of flat oval section, each 2 inches wide and $4\frac{1}{2}$ inches long.

The left half in the drawing shows the outside view of the end cover, with the brush holders and studs. There is a removable ring around the commutator part of the cover, so as to make the commutator and brushes readily accessible for inspection and cleaning. The inverted feet by which the motor is attached to the upper frame of the running gear are also plainly shown in this view.

An outside side elevation of the motor is given in Fig. 2, showing the brush holder studs, connecting nuts, removable ring and the extension of the armature shaft, upon which the driving sprocket attaches. The ball bearings are covered on the ends, so as to render them dust and dirt proof. They are readily accessible for inspection and adjustment by removing the small caps shown on each end.

The motor is 12 inches in diameter and $7\frac{1}{2}$ inches wide over the magnet frame, and $15\frac{1}{2}$ inches long from outside to outside of bearing dust covers. The end of the armature shaft upon which the driving sprocket is attached is 13-16 inches in diameter and $1\frac{1}{2}$ inches long. It has a $\frac{1}{4}$ by $\frac{1}{4}$ -inch key, and a threaded extension for a lock nut.

Figure 3 is a side partial sectional elevation of the motor, showing the two-row ball bearings, brush holders and brushes, commutator, armature core and winding, commutator connections to the armature, pole pieces and the field coils. There are openings in the end cover on the commutator side under the removable ring, to furnish accessibility to the brushes. The lower half of the drawing shows the outside of the armature after winding and covering. The construction of the two-row ball bearings, with its double sliding cup, threaded cone, washer and lock nut is plainly shown.

The armature shaft is 1 7-16 inches in diameter at its largest portion and is turned from $1\frac{1}{4}$ -inch Besse-

mer steel. The laminations of the armature core are held together by means of six 3-16-inch steel pins, riveted in the bronze end plates or flanges on each end of the armature core. These end plates are in turn fastened to the armature by means of $\frac{1}{4}$ -inch steel pins, as shown.

(To be Continued.)

Selections from Recent Patents.

No. 712,196, to W. J. and George Lane, of Poughkeepsie, N. Y., covers the details of construction of an automobile in which the leading feature is the method of adjusting the chain tension. The connection between the body and the rear springs is such that the body may be moved longitudinally in relation to the running gear. The front springs are rigidly attached to the body and to the front axle, so that longitudinal movement of the axle carries the body with it. The connection between the front axle and the running gear is a horizontal pivot which is provided with a screw adjustment for locating the axle longitudinally on the pivot. The engine is rigidly secured to the body and drives by chain directly to the rear axle. Thus the position of the body in relation to the running gear regulates the tension of the chain.

No. 712,283, to Jacob H. Genter, of Albany, N. Y., presents a pivoted steering hub. Both the wheel and pivot are provided with ball bearings. A modification is shown in which the pivot bearings are fitted with taper rollers.

No. 712,329, to Charles R. Pflaging, of Baltimore, Md., assignor of one-half to O. L. Gooden, of the same place, is devoted to a steam engine for automobile use. The engine is entirely encased and is designed to be placed in a horizontal position on or near the driving axle. The crank shaft does not extend outside the case, but there is a longitudinal shaft which passes between the cylinders and is provided at its inner end with a bevel gear meshing with a similar gear on the crank shaft. At the outer end of this shaft is a spur pinion in mesh with a spur gear on the differential. Thus the drive is practically direct to the road wheels.

No. 712,583, to James W. Packard and William A. Hatcher, of Warren, O., assignors to Ohio Automobile Co., of the same place, covers a speed controlling device, the leading feature of which is a sliding cam plate whereby the various sets of gears are placed in operative connection. The gear system is simple, being merely a number of sets of spur gears giving the desired ratio and adapted to be put in and out of gear by the above cam plate, thus placing the entire arrangement under the control of a single lever.

No. 712,791, to Carl O. Hedstrom, of Portland, Conn., assignor to George M. Hendee, of Springfield, Mass., is for a muffler designed for use on a motor bicycle. The principal object of the invention is to so deflect the escaping vapor that it will not come in contact with either wheel of the machine. To this end the final outlet is a circular row of holes in the end of the muffler near its outer edge. Over these holes is a circular plate with a circular opening so arranged that the gases are emitted in converging lines across the face of the muffler and thence downward.

TOPICS OF INTEREST TO MOTOR CYCLISTS

Trailer in Motor Cycle Club Runs.

The motor cycle trailer has received so much attention in England and Europe that it has been adopted by prominent members of the New York Motor Cycle Club. In several of the club's runs on Long Island and other roads President E. J. Willis has appeared at the rendezvous of the meet with his 2-horsepower machine equipped with a trailer carrying one passenger. Owing to the mishaps to the machines of some of the other members he has had an opportunity to demonstrate the practical utility of the trailer.

On election day he was unable to meet the others at the time of the scheduled start, and it was nearly noon before he got away from his house. His young son, ten years old, accompanied him in the trailer. The trailer is a miniature hansom cab, without a hood, and is fastened to the motor cycle by means of a bent steel tube with a universal joint at the connection. It has a wicker body and weighs altogether about 35 pounds.

Arriving at the starting place, Mr. Willis found that the other members had left three hours before, and he started alone after them with the trailer. In the course of his trip he encountered several of the club members, among whom was R. G. Betts, who was being towed, his machine having become disabled. He accepted the invitation of Mr. Willis to return in the trailer, and, taking the boy on his knee, was brought back to the finishing point.

Much of the trip had been made through city streets, and returning at night the streets was thronged with people. At no time did the trailer give trouble, nor did the extra load embarrass the motor. In fact, Mr. Willis is of the opinion that it is thoroughly practical and can be used with any motor cycle. It is also his opinion that the trailer is one of the most attractive features of the development of motor cycling.

Example of Single Lever Control.

The tendency in motor bicycle construction is decidedly toward simplification of control, and both in this country and abroad are numerous examples of structural combinations devised to secure what is commonly called "one lever control." Probably the extent to which this combination of controlling mediums may be effected is no better illustrated than by the latest model of the English Quadrant motor bicycle. This machine is fitted with a lever whose manifold purposes are as follows, the various positions enumerated being shown in the accompanying illustration:

No. 1.—The electric switch is off, the gas is off, the exhaust valve is open. The machine rides as an ordinary bicycle in city traffic, in passing restive horses, or in coasting hills. One pull of the lever puts the rider in

safety in any time of danger, and allows the engine to be cooled down every slope.

No. 2.—The electric switch is on, the exhaust valve closed, the gas on sufficient for moderate speed, ignition not advanced.

No. 3.—Gas on full, ignition not advanced.

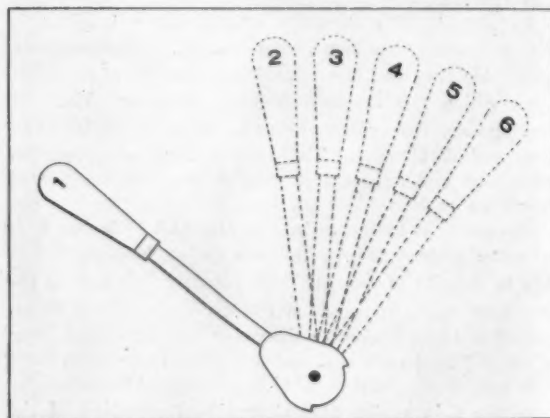
No. 4 to 5.—Gas on full, ignition advancing according to the speed required.

No. 5 to 6.—Commences to cut off gas, ignition still advancing. This is the position for favorable circumstances, such as driving down gentle slopes. The forward ignition gives the high speed, a small amount of gas is used, and thus the engine does not become overheated, notwithstanding the rapid explosions.

When the lever is at position 2, that is, as soon as the exhaust valve is closed, the supply of gas is for a speed of ten to twelve miles an hour. Should he desire to go slowly, the rider has only to pull the lever further back according to the speed he may wish.

Tips for Motor Cycle Users.

If one finds that after fitting a new sparking plug there is a strange lack of compression, the chances are that the plug itself is not pressure-tight. This can soon be proved by wetting around the porcelain and packing nut and turning the fly wheel. The escaping air will blow bubbles at the point of leakage. Experience with porcelain plugs seems to prove that it is hardly the best practice to have the inner porcelain surface flush with the screwed shank. There is certainly more chance of short circuiting across a carbon deposit to the edge of the screwed shank than when the porcelain pro-



Example of One Lever Control.

jects some distance beyond it. Another point about porcelain plugs is the possibility of the insulating core becoming in time soaked through with carbonaceous matter, which causes a leakage. This is more likely to occur with a poorly glazed porcelain, and although the majority of high class plugs give excellent service, there is nothing else to account for the deterioration of some plugs after continued use.

It is most important in replacing to get a valve spring of the same tension as the one previously fitted,



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The Standard Runabout of the World

The motor carriage that has stood every test. Fifteen cups won in speed races. Two blue ribbons in the Chicago Endurance Run and the highest award.

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Oldsmobile Co., Cleveland, O.	Clark & Hawkins, Houston, Tex.	C. H. Johnson, Atlanta, Ga.
W. E. Metzger, Detroit, Mich.	Hyslop Bros., Toronto, Ont.	Sutcliffe & Co., Louisville, Ky.
Oldsmobile Co., Githens Bros. Co., Chicago.	Manufacturers Co., San Francisco, Cal.	Brown-Thompson & Co., Hartford, Conn.
Fisher Automobile Co., Indianapolis, Ind.	John W. Chester Co., Nashville, Tenn.	Mason's Carriage Works, Davenport, Ia.
Olds Gasoline Engine Works, Omaha, Neb.	A. F. Chase & Co., Minneapolis, Minn.	The Oldsmobile Co., Grand Rapids, Mich.
W. C. Jaynes Auto. Co., Buffalo, N. Y.	J. E. Richard, Columbia, S. C.	
F. L. C. Martin Co., Plainfield, N. J.	Oldsmobile Co., Milwaukee, Wis.	Kline Cycle & Auto. Co., Harrisburg, Pa.

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TRY TO
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A TIRE
WITHOUT
A JACK?

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THE B. B. JACK

CAN BE CARRIED IN ANY TOOL BOX
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THING FROM A TABLE TO A TROL-
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otherwise the running of the motor may be seriously affected. Supposing it is a shade stronger the valve will not open until the suction stroke has well commenced, and thus a full charge of mixture will not be taken into the cylinder; and again if it is a shade weaker the charge will be lost to some extent on the compression stroke because the closing will not be sharp enough.

A matter that is often overlooked is the security of contact at the plug switch. With continued use the plug gets an easy fit in the springs, and if a slight film of grease accumulates it may fail to make contact. It is an easy matter to press the springs closer with a pair of pliers, so that the plug makes a firm contact.

Theoretically, to be able to get constant power from an internal combustion engine, the cylinder ribs must always dissipate a definite number of heat units. With an air-cooled engine, this will depend to a large extent upon the draft of air on the radiators, which is proportional to the speed at which the cycle is running. When a hill is reached, the speed drops and the cooling effect is produced, as the draft is not so strong. The incoming charge of gas and air obeys the law of expansion, and as the combustion chamber is now at a higher temperature, the charge is rarefied or weakened to such an extent that it fails to ignite. Some authorities even hold that a decomposition of the gas ensues, as only a small proportion of the full charge can be taken in, owing to the cylinder space filling up so quickly with the expanded gas. When overheated, the admission of a stronger charge only accentuates the difficulty, and the only thing to do is to cool down the engine until it will run on a weak charge.

Seventy Years Ago.

In connection with the always interesting topic of the early efforts to produce self-propelled road vehicles, is an action taken by the British parliament in 1831. A commission was appointed to determine the possibility of establishing a road passenger service with vehicles driven by steam. The report of the commission summarized is as follows:

That steam vehicles could reach an average speed of ten miles on good roads; that at this speed the vehicles were able to carry as many as fourteen passengers; that their weight with water and other supplies when ready was about three tons; that they could ascend and descend steep grades in a very satisfactory way; that when well built they were not dangerous; that they would become a more economical and a faster means of transport than the vehicles driven by horses; that as their tires were wide they would not spoil the roads as much as the wheels of ordinary vehicles and the feet of horses.

Paste This in Your Hat.

Don't use either cheap or steam engine oil in your motor.

Don't fail to see that your motor is properly oiled every time you use it.

Don't neglect to find out if the water is circulating properly when your motor is running.

Don't allow the motor, when outdoors on a frosty day, to stand still; keep it running slowly.

Don't allow the carburetor to get full of greasy deposits or dirt.

Don't let the batteries or induction coil become wet.

Don't fail to examine the motor occasionally and also to keep it clean.

Don't try to make any improvement on the motor or allow any so-called expert to do so.

Don't blame the motor if it does not start up at once; look for the trouble; it may be your fault.

MISCELLANEOUS

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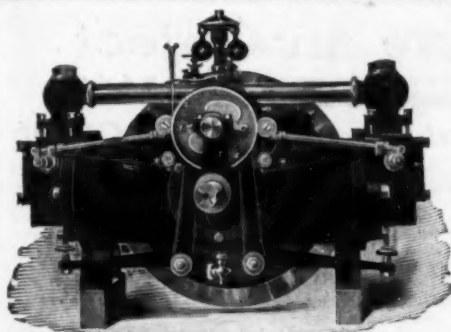
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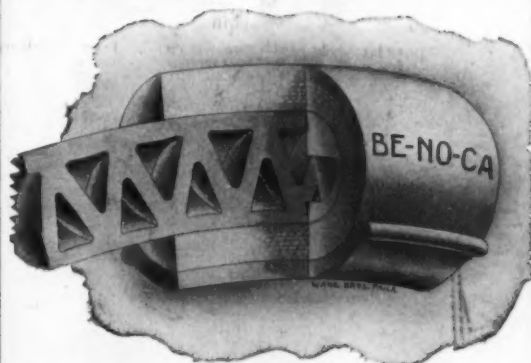
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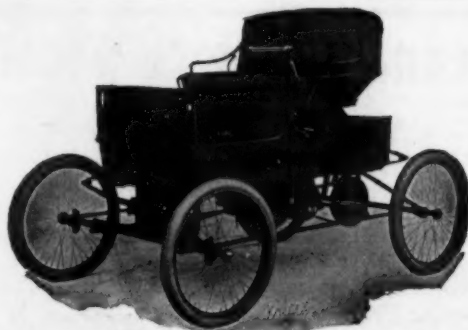
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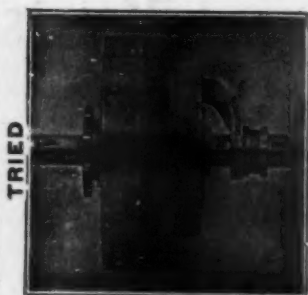


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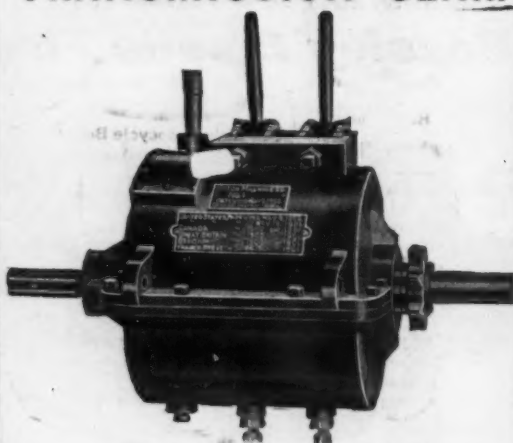
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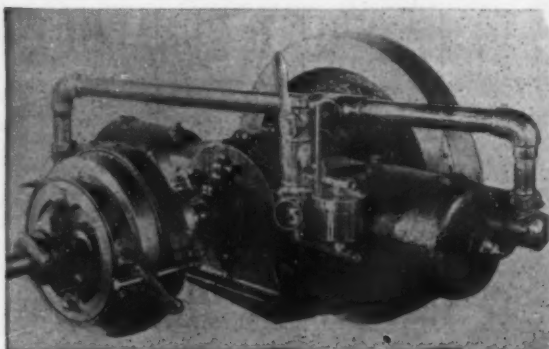
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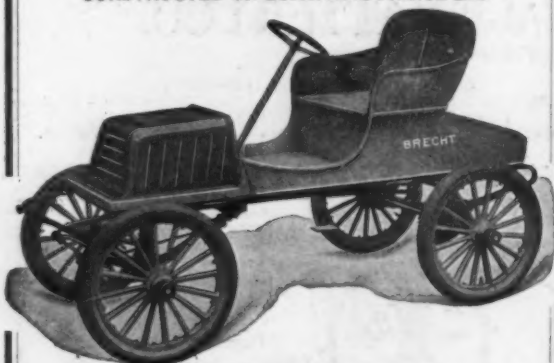
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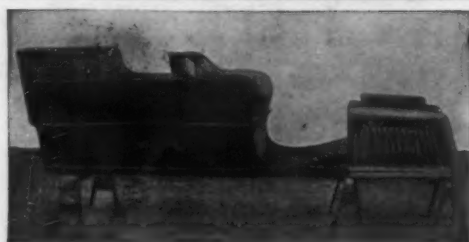


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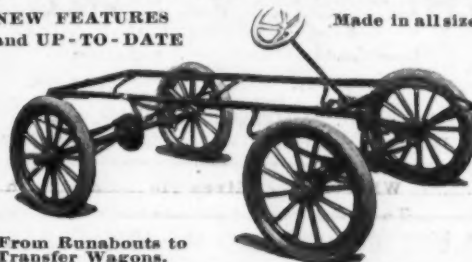
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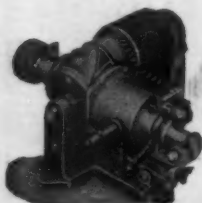
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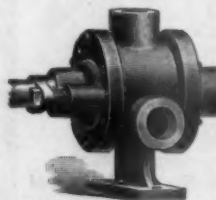


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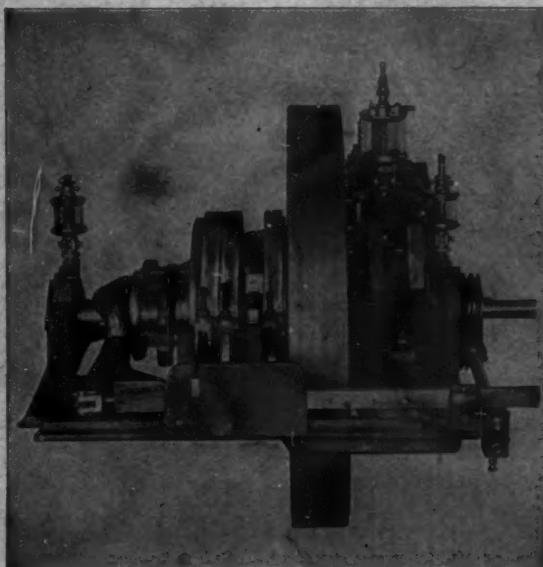
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